2020 Fraser Sockeye

Draft IFMP Escapement Options & Key Management Considerations

presented to: Forum on Conservation and Harvest Planning
by: J. Scroggie
March 2020

Presentation Outline – Escapement Options

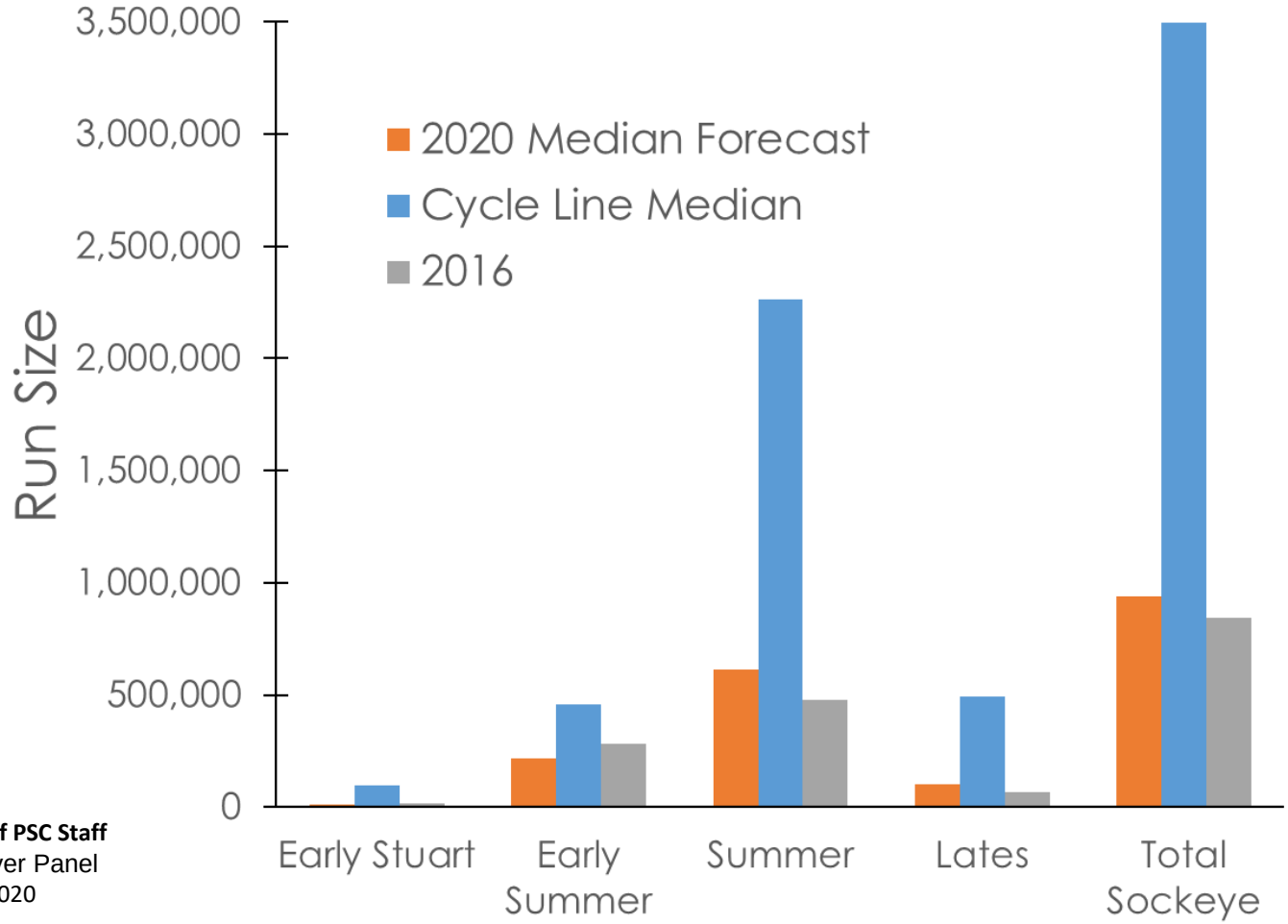
- Review of preseason forecast
- Draft escapement plan options
  - Total Allowable Mortality (TAM) rule description
  - Review of 2020 draft escapement plan options
  - Projected Escapement tables for each option
  - Questions for consideration

Fraser Sockeye Forecast Conclusions

- 2020 forecast return at p50 is expected to be generally low (< 1M), similar to 2016 return, and below the cycle line median
  - planning at p50 (and below - e.g. p10, p25 - also likely a good idea)

- Summer Run
  - forecast to dominate the returns → 65% of total forecast at p50 (Chilko (27%), Harrison (18%), Stellako (10%))

Run Size Forecast



Courtesy of PSC Staff
Fraser River Panel
February 2020

Total Allowable Mortality Rule Explained

Management Unit	Harvest Rule Parameters Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point
Early Stuart	10%	60%	108,000	270,000
Early Summer (w/o misc)	10%	60%	100,000	250,000
Summer (w/o misc)	10%	60%	1,250,000	3,125,000
Late (w/o misc)	20%-30%	60%	300,000	750,000

Option 1- Brood Year (2016) Escapement Plan

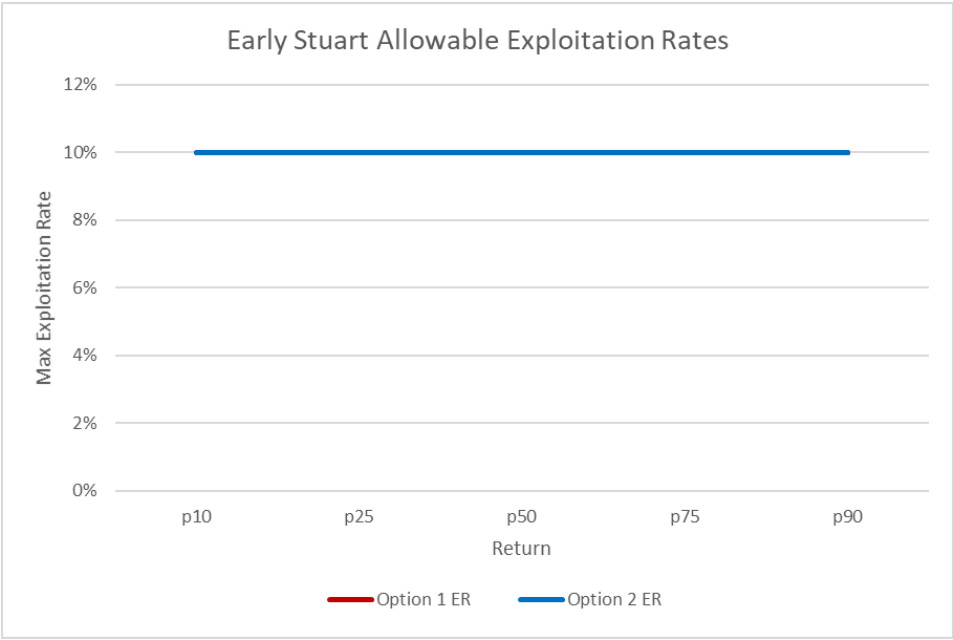
Management Unit	Harvest Rule Parameters Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point	Pre-season pMA @p50
Early Stuart	10%	60%	108,000	270,000	0.69
Early Summer (w/o misc)	10%	60%	100,000	250,000	0.52
Summer (w/o misc)	10%	60%	640,000	1,600,000	0.15
Late (w/o misc)	20%	60%	300,000	750,000	0.43

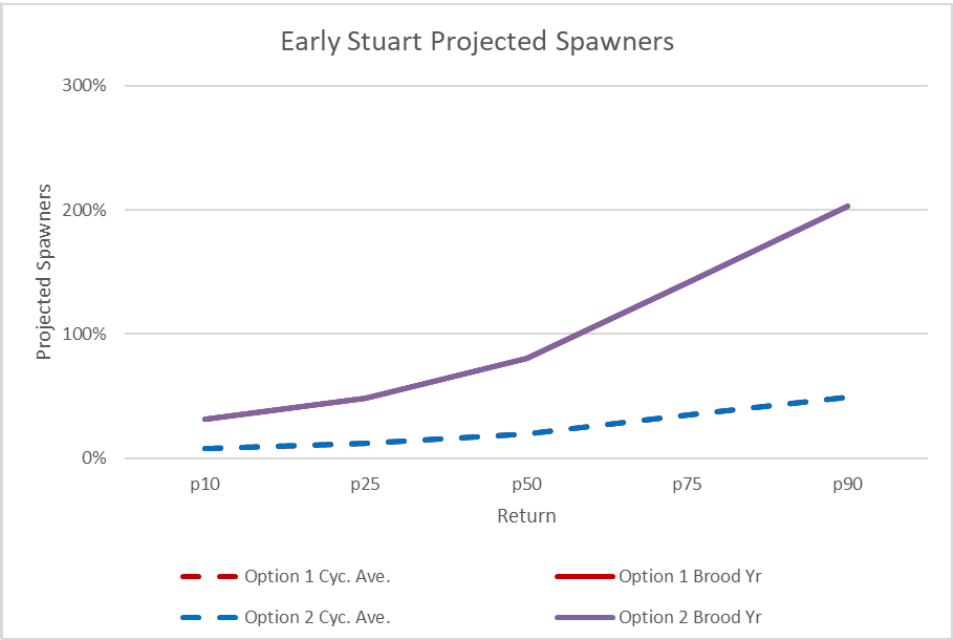
Option 2- Conservative Option: Low TAMs and LAERs, higher reference points.

Management Unit	Harvest Rule Parameters Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point	Pre-season pMA @p50
Early Stuart	10%	50%	108,000	216,000	0.69
Early Summer (w/o misc)	10%	50%	180,000	360,000	0.52
Summer (w/o misc)	10%	50%	1,000,000	2,000,000	0.15
Late (w/o misc)	10%	50%	300,000	600,000	0.43

Note: Grey cells emphasize changes from the 2016 Brood Year Escapement Plan.

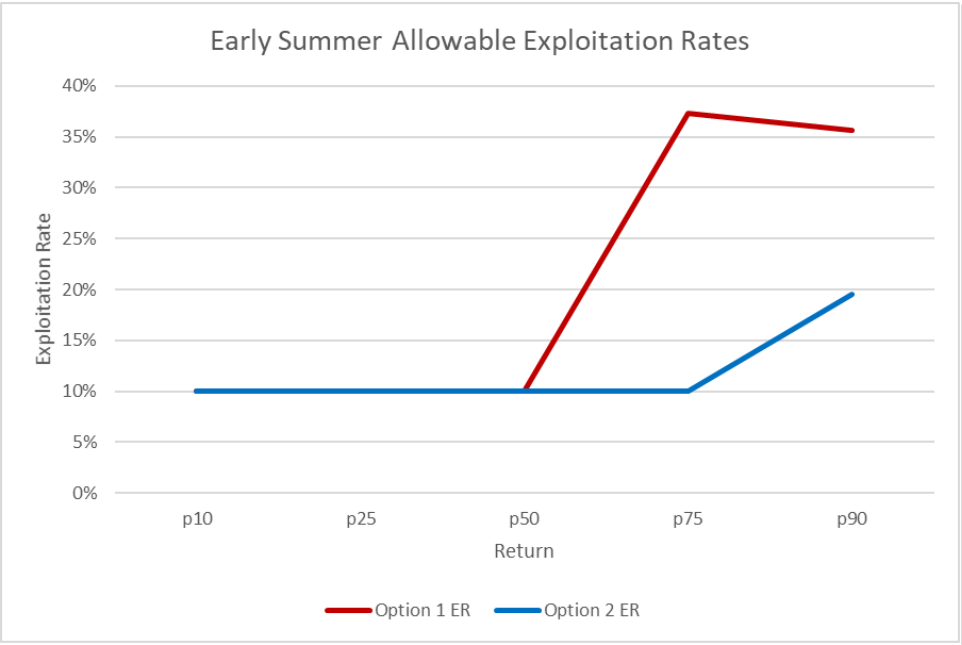
Early Stuart Option Comparison

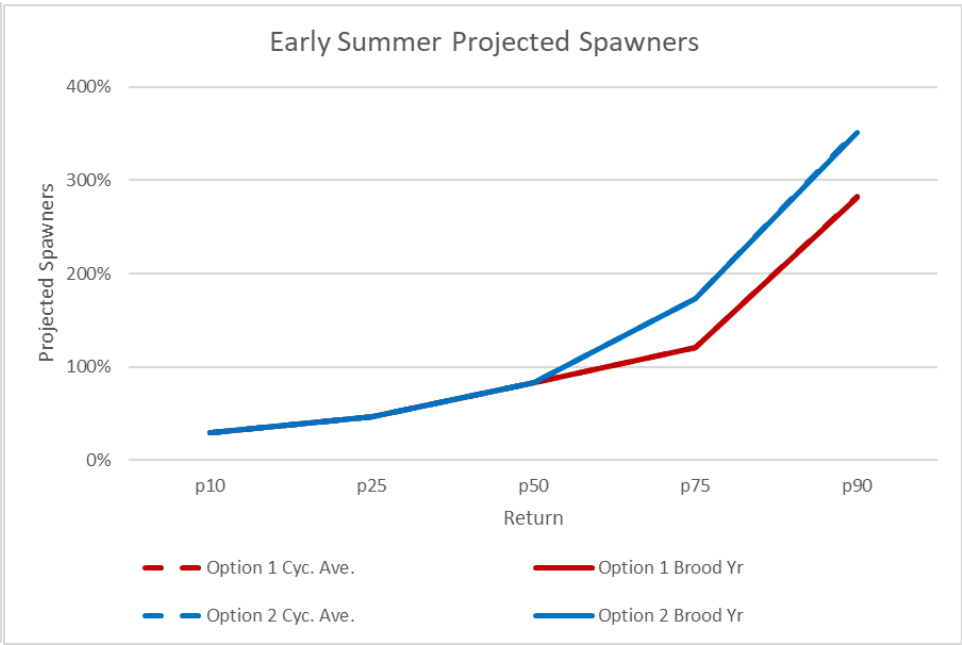




	Management Unit	Harvest Rule Parameters Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point	Pre-season pMA @p50
Option 1	**Early Stuart**	10%	60%	108,000	270,000	0.69
Option 2	**Early Stuart**	10%	50%	108,000	216,000	0.69

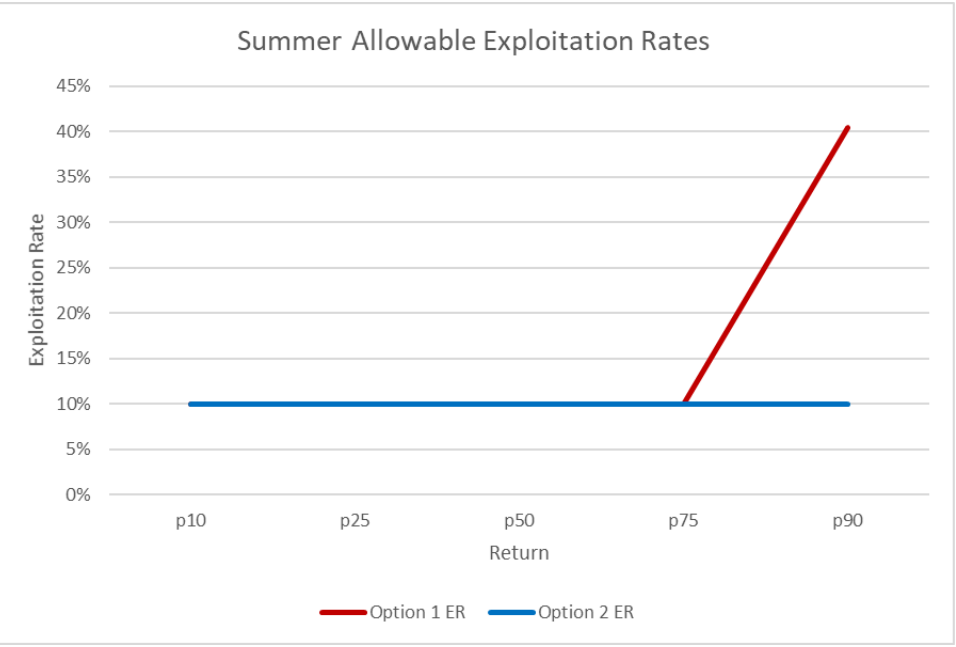
Early Summer Options Comparison

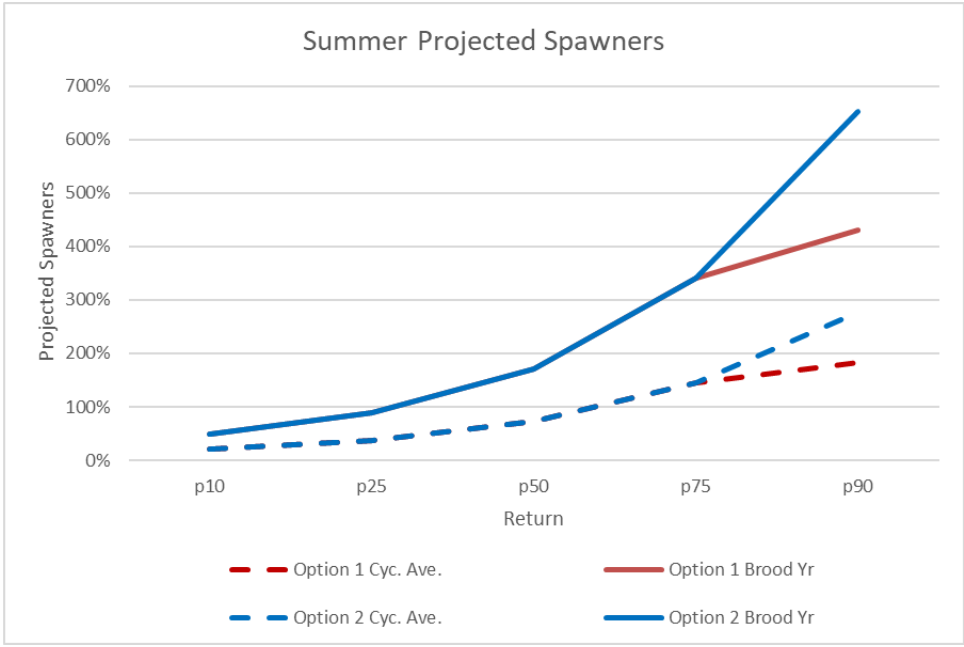




	Management Unit	Harvest Rule Parameters Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point	Pre-season pMA @p50
Option 1	**Early Summer (w/o misc)**	10%	60%	100,000	250,000	0.52
Option 2	**Early Summer (w/o misc)**	10%	50%	180,000	360,000	0.52

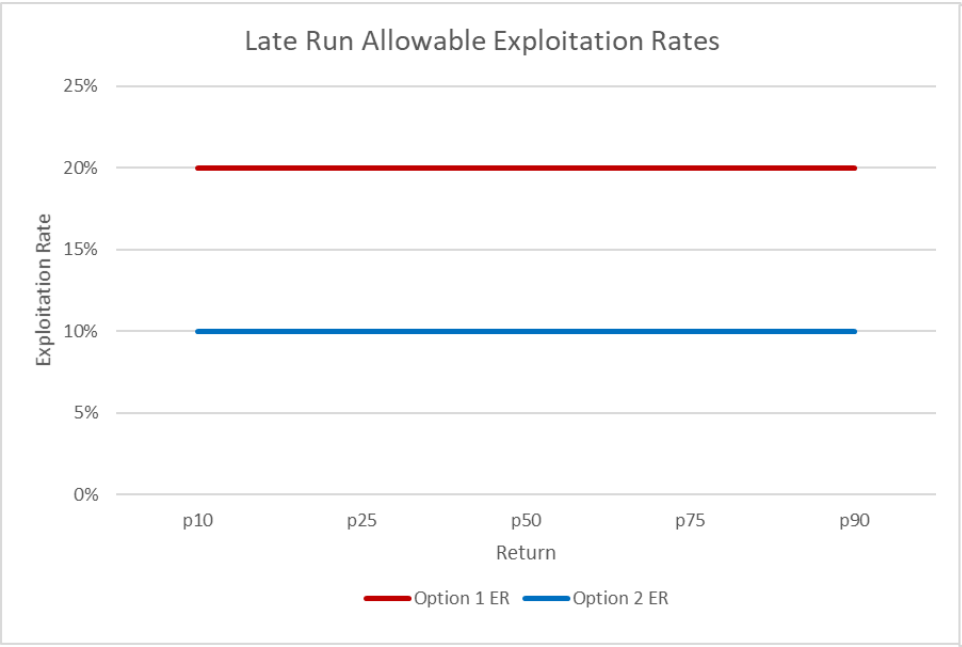
Summers Options Comparison





	Management Unit	Harvest Rule Parameters Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point	Pre-season pMA @p50
Option 1	**Summer (w/o misc)**	10%	60%	640,000	1,600,000	0.15
Option 2	**Summer (w/o misc)**	10%	50%	1,000,000	2,000,000	0.15

Lates Options Comparison



	Management Unit	Harvest Rule Parameters Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point	Pre-season pMA @p50
Option 1	**Late (w/o misc)**	20%	60%	300,000	750,000	0.43
Option 2	**Late (w/o misc)**	10%	50%	300,000	600,000	0.43

Escapement Options- Summary

	p10	p25	p50	p75	p90
Option 1					
Allowable Harvest (TF, US, CDN)	30,375	54,090	103,970	338,460	1,429,900
Total projected spawners	200,700	352,800	669,400	1,253,800	1,863,100
Option 2					
Allowable Harvest (TF, US, CDN)	27,557	48,810	94,070	191,280	492,400
Total projected spawners	202,700	356,500	676,300	1,349,300	2,611,000
Difference (Option 2 - Option 1)					
Allowable Harvest (TF, US, CDN)	(2,818)	(5,280)	(9,900)	(147,180)	(937,500)
Total projected spawners	2,000	3,700	6,900	95,500	747,900

Harvestable surplus below AFE amount at the p75 (well below FSC needs).

- No International TAC below p75 return under current assumptions.
- Early Stuarts and Late Run will likely be in a LAER for the entire forecast range.
- Early Summer harvestable surplus above p50 for Option 1 and above p75 for Option 2.
- Summer Run harvestable surplus above the p75 for Option 1 but in LAER for Option 2 (all p-levels).

Projected Escapements Tables

Please refer to your hand-out “2020/2021 Draft Escapement Plan Options” for copies of the two tables that follow.

Option 1- Projected Escapements Relative to Cycle Average and Brood Year

Option 1- Projected Escapements Relative to Cycle Average and Brood Year

Run timing group / Stocks	Total Escapement Cycle Ave	Total Escapement Brood Year	Comparisons @p10 Cycle Ave	Comparisons @p10 Brood Year	Comparisons @p25 Cycle Ave	Comparisons @p25 Brood Year	Comparisons @p50 Cycle Ave	Comparisons @p50 Brood Year	Comparisons @p75 Cycle Ave	Comparisons @p75 Brood Year
Early Stuart	**35,354**	**8,612**	**8%**	**31%**	**12%**	**49%**	**20%**	**80%**	**35%**	**142%**
Early Summer	**155,761**	**156,520**	**30%**	**30%**	**46%**	**46%**	**84%**	**83%**	**121%**	**120%**
Bowron	6,895	143	4%	203%	8%	364%	17%	804%	17%	839%
Upper Barriere	8,716	1,152	20%	150%	33%	250%	53%	400%	64%	487%
Gates	29,655	8,797	12%	39%	18%	59%	29%	98%	38%	128%
Nadina	23,521	26,632	64%	56%	103%	91%	176%	156%	227%	200%
Pitt	32,360	58,241	64%	35%	76%	42%	97%	54%	94%	52%
Scotch	2,085	990	28%	59%	55%	116%	110%	232%	154%	324%
Seymour	7,412	374	6%	123%	16%	307%	23%	463%	33%	644%
Misc (EShu)	12,065	203	5%	286%	14%	852%	33%	1985%	43%	2567%
Misc (Taseko)	2,149	164	6%	73%	13%	177%	24%	317%	37%	488%
Misc (Chilliwack)	25,927	57,928	10%	5%	32%	14%	115%	51%	268%	120%
Misc (Nahatlatch)	4,976	1,896	23%	61%	46%	121%	93%	243%	113%	296%
Summer	**653,758**	**277,805**	**21%**	**49%**	**38%**	**89%**	**73%**	**172%**	**145%**	**341%**
Chilko	457,386	155,687	17%	50%	28%	81%	46%	136%	79%	233%
Late Stuart	47,528	10,066	10%	49%	24%	115%	61%	288%	145%	683%
Quesnel	11,041	1,081	6%	61%	8%	77%	15%	154%	30%	306%
Stellako	109,427	30,307	22%	79%	38%	137%	70%	254%	129%	467%
Harrison	10,782	65,758	158%	26%	390%	64%	1024%	168%	2553%	419%
Raft	14,903	8,150	28%	51%	50%	91%	100%	183%	178%	325%
Misc (N. Thomp. Tribs)	610	511	67%	80%	136%	162%	272%	325%	679%	810%
Misc (N. Thomp River)	1,142	5,926	580%	112%	1450%	279%	2610%	503%	5583%	1076%
Misc (Widgeon)	939	319	6%	19%	21%	63%	49%	144%	70%	207%
Late	**435,329**	**45,091**	**4%**	**35%**	**7%**	**65%**	**13%**	**123%**	24%	235%
Cultus	11,247	2,606	0%	1%	0%	2%	1%	2%	1%	5%
Late Shuswap	310,704	49	0%	20%	0%	41%	0%	82%	0%	122%
Portage	1,223	41	1%	24%	1%	24%	2%	73%	4%	122%
Weaver	28,414	300	0%	10%	0%	13%	0%	20%	1%	63%
Birkenhead	78,517	36,441	17%	36%	28%	60%	50%	107%	96%	207%
Misc. non-Shuswap	5,224	5,654	44%	41%	143%	132%	309%	285%	573%	530%

= or > 125%
< 125%
< 75%
< 25%

Option 2- Projected Escapements Relative to Cycle Average and Brood Year

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= or > 125%
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Run timing group / Stocks	Total Escapement Cycle Ave	Total Escapement Brood Year	Comparisons @p10 Cycle Ave	Comparisons @p10 Brood Year	Comparisons @p25 Cycle Ave	Comparisons @p25 Brood Year	Comparisons @p50 Cycle Ave	Comparisons @p50 Brood Year	Comparisons @p75 Cycle Ave	Comparisons @p75 Brood Year
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Bowron	6,895	143	4%	203%	8%	364%	17%	804%	25%	1210%
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Misc. non-Shuswap	5,224	5,654	50%	46%	161%	149%	347%	321%	645%	596%

Projected Escapements Summary

- Early Stuart and Late Run spawners projected to be well below cycle average over entire forecast range for both Options.
- Early Summer and Summer Run spawners projected to be near cycle average at a p50 return for both Options. Some stocks within the aggregates projected to be low.

Questions for Consideration related to the proposed escapement plans

- Given the Big Bar slide and a low forecast do you support a more conservative escapement plan?
- Are there additional measures that should be considered for specific stocks within the aggregates that are a concern as far as expected escapements, large or weak? An example of this would be adding one week to the Early Stuart window closure to provide additional protection to the early-timed Early Summer run stocks.
- Given recent returns and uncertainty in the forecast are there additional actions that should be considered to address returns at the lower end of the forecast?

2020 Fraser Sockeye

Key Management Considerations and feedback to date

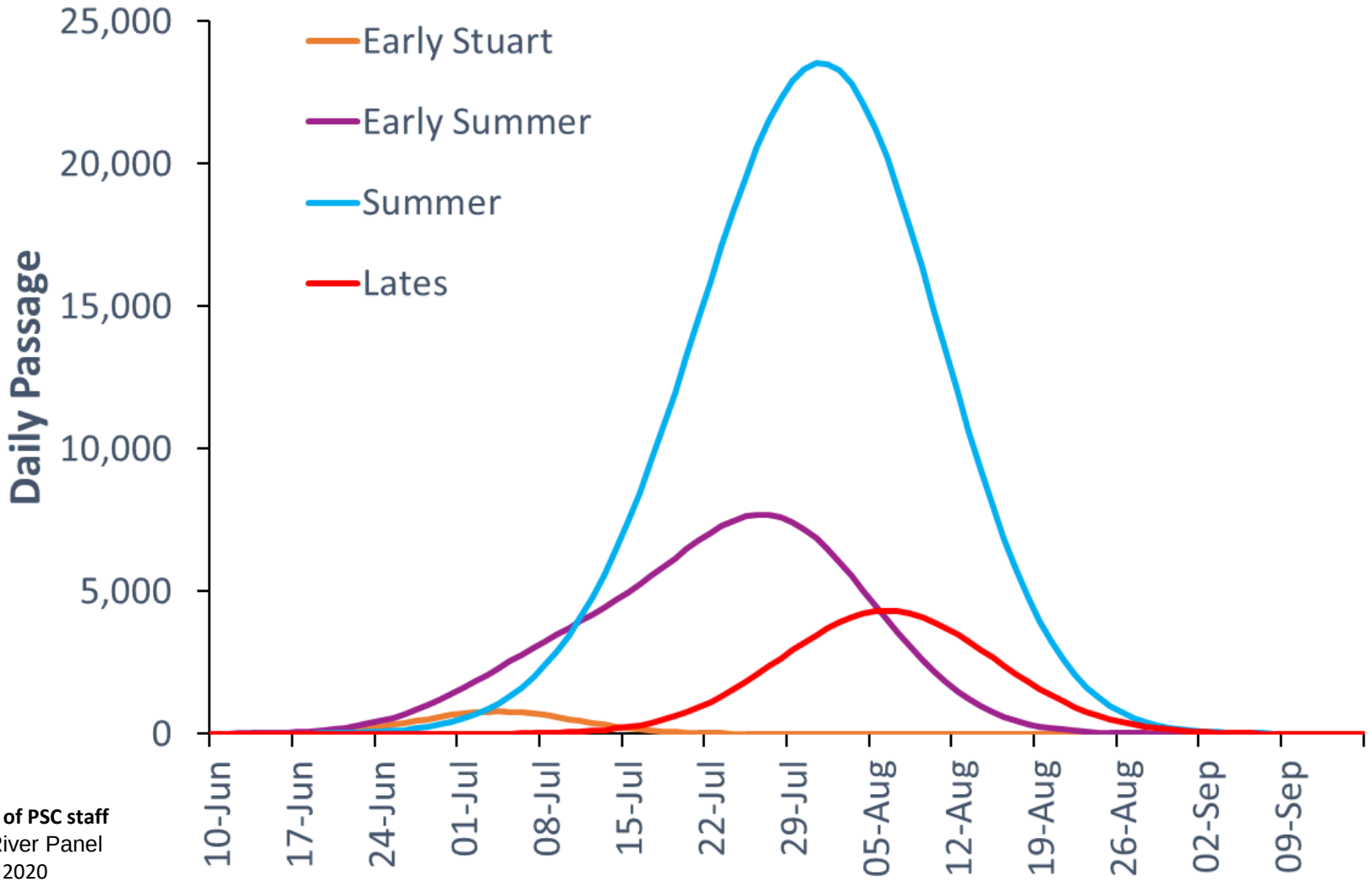
Outline – Key Management Considerations

- Run timing considerations
- Proposed window closure dates
- Key considerations and feedback
- Feedback to date

Sockeye Run Timing Considerations

- Likely considerable overlap between different Sockeye run timing groups.
- Early Stuart & Late Runs → directed harvest opportunities unlikely.
- Early Summer and Summer Runs→ directed harvest opportunities unlikely except at perhaps p75 or above. Majority of production for Early Summers anticipated from lower river stocks.
- Cultus considerations → Not expected to meet objectives. Will be managing to a LAER.
- Potential constraints due to management actions for other species (e.g. Chinook, SRKW, IFR Coho, IFR Steelhead).

Sockeye Run Timing Considerations



Courtesy of PSC staff
Fraser River Panel
February 2020

Sockeye Window Closure Proposed Dates

- In some marine areas, the window closure must also take into consideration the timing of Sakinaw sockeye.
- In some years, a one week extension is added on to the Early Stuart closure with the aim of providing some protection to earlier returning Early Summer sockeye (e.g. Bowron and Taseko).

Do you have any advice on how long the window closure should be to protect Early Stuart and potentially Early Summer Sockeye in 2020?

Please see your hand-out "Considerations for 2020/2021 IFMP Guidance for a more detailed version of the table provided on the next slide.

Proposed Early Stuart Window Closure Dates (2020 draft IFMP)

Areas	Start Date	End Date ~3 Weeks	End Date ~4 weeks
Areas 11 to 17, 19 to 21, 121 and 123 to 127	June 19	July 22	July 15
Areas 18 and 29	June 27	July 20	July 27
Steveston to Mission	June 27	July 20	July 27
Mission to Sawmill	June 29	July 22	July 29
Sawmill to Deadman	July 2	July 24	July 31
Deadman to Naver	July 6	July 28	Aug 4
Naver to Isle Pierre (Nechako River)	July 11	Aug 2	Aug 9
u/s of Isle Pierre and Stuart watershed	July 13	Aug 4	Aug 11

Note that in-season, the actual dates may be adjusted based on in-season run timing information.

Key Points

- 2020 forecast = Low (p50 <1 Million total)
- Harvest opportunities will likely be very limited. Total allowable harvest (LAER) is around 100,000 at the p50 and between 190,000 and 338,000 at the p75.
- There are weak and strong stocks within management groups and overlaps in run timing.
- Environmental conditions → increased volatility, likely negative for Fraser Sockeye in 2020.
- Ongoing conservation concerns for red-listed stocks.
- Ongoing uncertainty re. Big Bar rock slide work, river discharge over the season, and passage to spawning grounds above the slide.

Questions for Consideration

- *Given the return forecast distribution and potential constraints to access allowable harvest should additional harvest in terminal areas where surpluses are expected be considered?*
- *Do you have feedback on how to manage FSC sockeye fisheries for stocks when there is not enough harvest available to catch the amount as set out in licences issued by DFO?*
- Potential reductions in test fisheries? – an update will be provided at the April Forum as more Fraser Panel discussion is required on this topic.

Fraser River Sockeye Management – Feedback To Date for 2020

First Nations

Consider a change to the forecast methodology for Fraser sockeye (i.e., a review over the past 3 cycles using adjusted forecast models may be able to inform changing the forecast methodology to producing more representative results).

Opposed to non-retention clauses in FSC fishery licences as killing and throwing away fish is against cultural and traditional principles.

Interested in exploring the opportunities available in the wild stock ESSR fisheries.

Interested in dual fishing during EO fisheries (opportunities to implement FSC retention of bycatch during EO fisheries).

Develop appropriate fishing plans for 2020 that satisfy Aboriginal and Treaty rights to harvest Fraser sockeye.

Work with First Nations to develop rebuilding objectives for wild WCVI chinook and sockeye populations.

Courtesy of J. Grout
DFO, February 2020

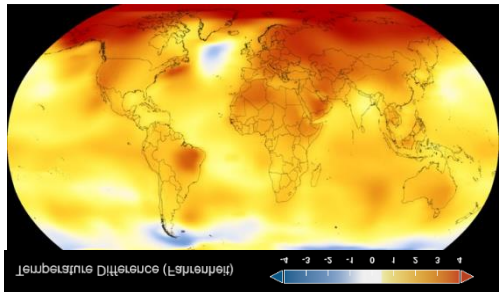
Thank you

EXTRA SLIDES

2020 Fraser Sockeye Forecast

Run timing group	Probability that Return will be at/or Below Specified Run Size				
	10%	25%	50%	75%	90%
Early Stuart	5,000	8,000	13,000	23,000	33,000
Early Summer	72,000	116,000	218,000	469,000	1,098,000
Summer	169,000	311,000	611,000	1,231,000	2,376,000
Late	28,000	53,000	99,000	190,000	374,000
TOTAL SOCKEYE	274,000	488,000	941,000	1,913,000	3,881,000

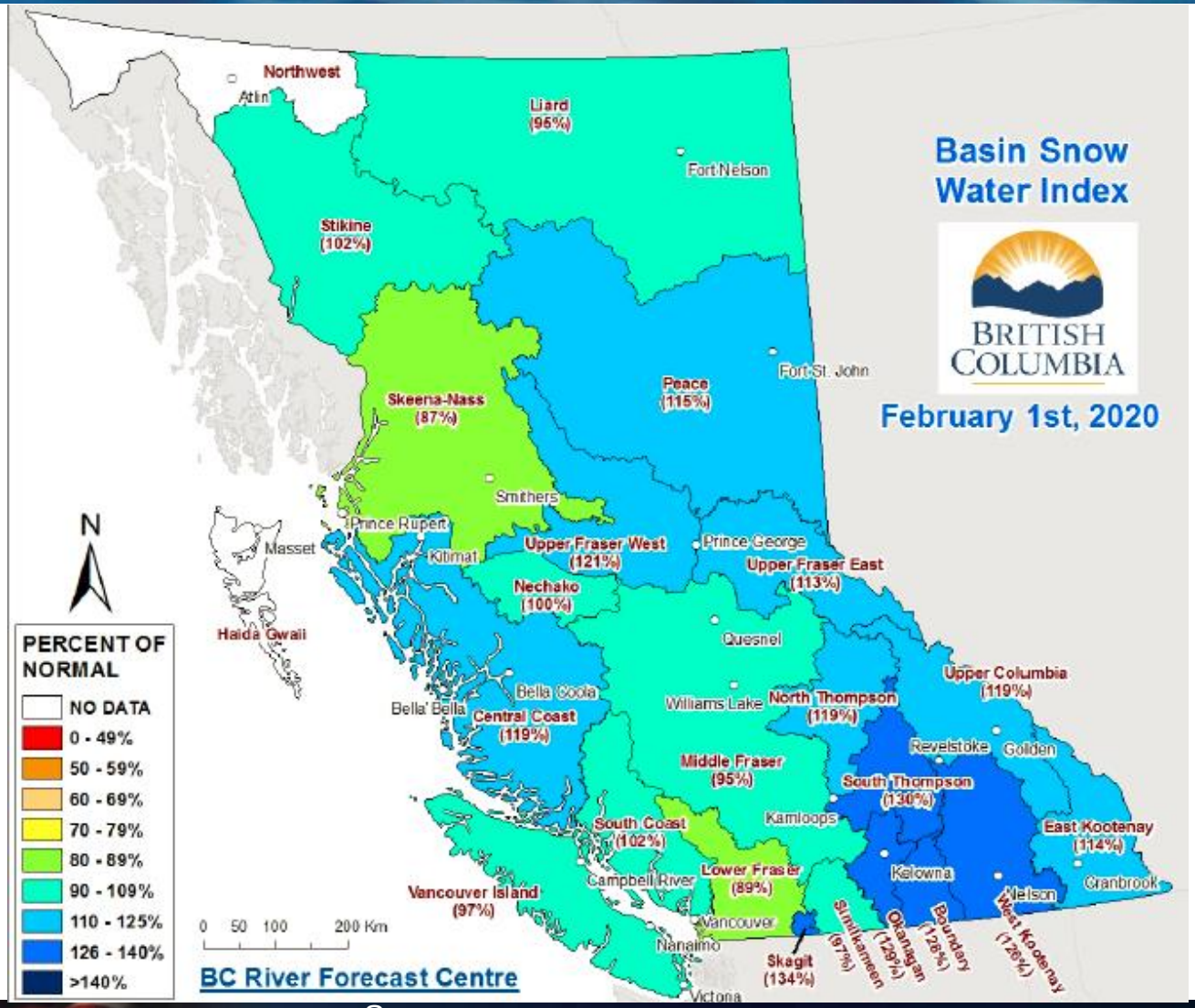
Environmental Considerations



Data source: NASA/GISS
Credit: NASA Scientific Visualization Studio

- General warming trend
- 2016 – 2018 freshwater conditions → generally neutral, unknown impacts of forest fires
- 2017 – 2019 marine conditions → generally negative, heat waves and poor food quality (zooplankton)
- Environmental impacts on 2020 Fraser Sockeye survival are likely negative

Environmental Conditions



Source: https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/river-forecast/2020_feb1.pdf